



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/567,182	02/03/2006	Ken Iizuka	112857-672	1180
29175 K&L Gates LLP P. O. BOX 1135 CHICAGO, IL 60690	7590 11/17/2009		EXAMINER WOLDEMARIAM, AKILILU K	
			ART UNIT 2624	PAPER NUMBER
			NOTIFICATION DATE 11/17/2009	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

chicago.patents@klgates.com

Office Action Summary

Application No.

10/567,182

Applicant(s)

IIZUKA, KEN

Examiner

AKLILU k. WOLDEMARIAM

Art Unit

2624

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7,9-11,13-19,21-23,25-31 and 33-35 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7,9-11,13-19,21-23,25-31 and 33-35 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
- Paper No(s)/Mail Date 08/21/2009, 06/11/2006, 02/03/2006
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed on 08/21/2009 has been entered. Claims 9, 10, 13, 21, 22, 25-31 and 33-35 have been amended. Claims 8, 20 and 22 have been cancelled. Claims 1-7, 9-11, 13-19, 21-23, 25-31 and 33-35 are still pending with, claims 1, 13, 25 being an independent.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-7, 9-11, 13-19, 21-23, 25-31 and 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirosyuki, (Japan Publication number 10-02-1391 from IDS) in view of Masaaki (Japan Publication number 11-003421 from IDS) in view of Wendt (U.S. Publication number 2002/0090109A1).

Regarding claims 1, 13 and 25, *Hiroyuki discloses* an image matching method for performing, a matching images to linear components in a first image and a second image and an image matching apparatus performing a matching to linear components in a first image and a second image and a computer readable medium storing a computer readable program for matching images to linear components in a first image and a second image said computer readable program structured to cause an apparatus to perform, the method and the apparatus (*see paragraph [0001] compare both images*

based on this result computed result and paragraph [0010] carrying out two-dimensional image matching processing) comprising:

a position correction step, performed by a position correction means, of performing a position correction processing to the first image and the second image (see paragraph [0001], compare both images based on this result computed result and paragraph [[0042]-[0045] compute correlation, to compute correlation a position correction means required).

a first step, performed after the position correction step and by a transformation means, of performing an image processing for performing transforming points in each image of the first image and the second image to a curved pattern and the linear components in each image to a plurality of overlapped curved-pattern (see paragraph [0001], compare both images based on this result computed result and paragraph [0010] performing hough transformation with matching reference logarithmic coordinate and matching reference logarithmic coordinate referred to with overlapped curved pattern)

and generating a first transformed image and a second transformed image (see paragraph [0010] two dimensional image matching and paragraph [0015]-[0019] an angle rotation and the rate calculating means of zooming or an amount calculating means of parallel translation and hough transformation),

wherein the image processing is performed to the first image and the second image which are results of the position correction processing in the position correction step to generate the first transformed image and the second transformed image (see paragraph

*[0001], compare both images based on this result computed result and paragraph
[[0042]-[0045] compute correlation, to compute correlation a position correction means
required), and*

a second step, performed by a matching means, of performing a matching of the first image and the second image based on a degree of an overlap of the patterns in the first transformed image and the second transformed image generated in the first step and a matching or mismatching of the patterns in the first and second transformed images (see paragraph [0010] two dimensional image matching and paragraph [0015]-[0019] an angle rotation and the rate calculating means of zooming or an amount calculating means of parallel translation and hough transformation and matching reference logarithmic coordinate referred to with overlapped curved pattern).

However, Masaaki discloses based on a distance from a reference position to a shortest point in a straight line passing through a point in the image and an angle between a straight line passing through the reference position and the shortest point and a reference axis including the reference position (see paragraph [0003], [0012], [0019] and [0025] linear components referred to shortest distance).

It would have been obvious to ordinary skill in the art at the time when the invention was made to use Masaaki's based on a distance from a reference position to a shortest point in a straight line passing through a point in the image and an angle between a straight line passing through the reference position and the shortest point and a reference axis including the reference position in Hiroyuki's an image matching method for performing a matching images to linear components in a first image and a second

image because it will allow to reduce computer storage capacity also to shorten computer processing and to reduce the effect of noise by calculating an edge point that is equal or more than threshold from the intensity of a differential value of an edge point [Masaaki's, *see abstract, lines 1-3*].

Regarding claims 2, 14 and 26, *Masaaki* discloses an image matching method and a computer readable medium storing a computer readable medium as set forth in claims 1, 13, 25 wherein the first step comprises a third step of extracting regions each of which indicates a degree of the overlap of the curved patterns in the transformed image equal to or greater than a threshold set in advance, from the first transformed image and the second transformed image (*see abstract, calculating an edge point that is equal to or more than threshold from the intensity of differential value of an edge and acquiring an image data that has inclination direction components and paragraph [0003] extract line segment and paragraph [0008] hough transformation as a line segment extraction method*), and

wherein, in the second step, the matching of the first image and the second image are carried out based on the matching or mismatching of the patterns in the regions extracted from the first transformed image and the second transformed image respectively in the third step (*see abstract, calculating an edge point that is equal to or more than threshold from the intensity of differential value of an edge and acquiring an image data that has inclination direction components and paragraph [0003] extract line segment and paragraph [0008] hough transformation as a line segment extraction method*).

Regarding claims 3, 15 and 27, Masaaki discloses an image matching method and a computer readable medium storing a computer readable program as set forth in claim 2, 14, 26 wherein, in the third step, the threshold is determined based on a size of the extracted region such that the size of the extracted region is larger than the set value (see abstract, calculating an edge point that is equal to or more than threshold from the intensity of differential value of an edge and acquiring an image data that has inclination direction components).

Regarding claims 4, 16 and 28, Masaaki discloses an image matching method and a computer readable medium storing a computer readable medium as set forth in claim 2, 14, 26 wherein, in the third step, the threshold is determined based on the size of the extracted region such that the size of the extracted region is within the set value (see abstract, calculating an edge point that is equal to or more than threshold from the intensity of differential value of an edge and acquiring an image data that has inclination direction components and paragraph [0003] extract line segment and paragraph [0008] hough transformation as a line segment extraction method).

Regarding claims 5, 17 and 29, Masaaki discloses an image matching method and a computer readable medium storing a computer readable program as set forth in claim 2, wherein, in the third step, the image is deleted when the size of the extracted region is less than the set value (see abstract, calculating an edge point that is equal to or more than threshold from the intensity of differential value of an edge and acquiring an image data that has inclination direction components and paragraph [0003] extract

line segment and paragraph [0008] hough transformation as a line segment extraction method).

Regarding claims 6, 18 and 30, *Hiroyuki discloses* an image matching method and a computer readable medium storing a computer readable medium as set forth in claim 1, 13, 25 wherein, in the first step, a Hough transform processing is performed to the first image and the second image to generate the first transformed image and the second transformed image (*see paragraph [0001], compare both images based on this result computed result and compare referred to matching images and paragraph [0010] two dimensional image matching and paragraph [0015]-[0019] an angle rotation and the rate calculating means of zooming or an amount calculating means of parallel translation and hough transformation).*

Regarding claims 7, 19 and 31, *Hiroyuki discloses* an image matching method and a computer readable medium storing a computer readable program as set forth in claim 1, 13, 25 wherein, in the second step, a comparison processing is performed to a plurality of different positional relationships in the first transformed image and the second transformed image generated in the first step (*see paragraph [0001], compare both images based on this result computed result and compare referred to matching images and paragraph [0042]-[0045] compute correlation);*

a similarity-as a correlation value is generated based on a result of the comparison processing, and the matching of the first image and the second image are carried out based on the generated similarity (*see paragraph [0001], compare both images based*

on this result computed result and compare referred to matching images and paragraph [0042]-[0045] compute correlation).

Regarding claims 9, 21 and 33, *Hiroyuki discloses* an image matching method and a computer readable medium storing a computer readable program as set forth in claim 8, 21, 25 , wherein, in the tenth step, as the position correction processing, a correlation value is generated based on a phase component which is a result of a rotation angle correction processing or an enlargement ratio correction processing and the Fourier transform processing to the first image and the second image, and the position correction processing is performed to the first image and the second image based on the generated correlation value (*see paragraph [0001], compare both images based on this result computed result and compare referred to matching images and paragraph [0010] calculate a cross correlation and angle rotation and paragraph [0042]-[0045] compute correlation*).

Regarding claims 10, 22 and 34, *Hiroyuki discloses* an image matching method as set forth in claim 8, wherein, position correction step, a plurality of the correlation value indicating a corrected position is generated by a correlation processing to the first image and the second image, and a plurality of the position correction processing is performed to the first image and the second image based on the generated correlation value (*see paragraph [0001], compare both images based on this result computed result and compare referred to matching images and paragraph [0010] calculate a cross correlation and angle rotation and paragraph [0042]-[0045] compute correlation*),

in the first step, the image processing is performed to the results of the plurality of the position correction processing of the first image and the second image in the correction step to generate the first transformed image and the second transformed image, and in the second step, the correlation value is generated based on the patterns in the first transformed image and the second transformed image generated in the first step (see *paragraph [0001], compare both images based on this result computed result and compare referred to matching images and paragraph [0010] calculate a cross correlation and angle rotation and paragraph [0042]-[0045] compute correlation*); and the matching of the first image and the second image are carried out based on the generated correlation value and the threshold set in advance (see *paragraph [0001], compare both images based on this result computed result and compare referred to matching images and paragraph [0010] calculate a cross correlation and angle rotation and paragraph [0042]-[0045] compute correlation*).

Regarding claims 11,23 and 35, *Hiroyuki discloses* an image matching method as set forth in claim 10, wherein, the second step, the matching of the first image and the Second image are carried out to the result of the plurality of the position correction processing generated in the first step based on the total amount of the correlation value corresponding to different positions and the threshold set in advance (see *paragraph [0001], compare both images based on this result computed result and compare referred to matching images and paragraph [0010] calculate a cross correlation and angle rotation and paragraph [0042]-[0045] compute correlation*).

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AKLILU K. WOLDEMARIAM whose telephone number is (571)270-3247. The examiner can normally be reached on Monday- Friday 8:00 a.m.-5:00 p.m EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bali Vikram can be reached on 571-272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DANIEL G MARIAM/
Primary Examiner, Art Unit 2624

/A. k. W./
Patent Examiner, Art Unit 2624
11/07/2009